

THE OPEN UNIVERSITY OF SRI LANKA
 FACULTY OF ENGINEERING TECHNOLOGY
 DIPLOMA IN TECHNOLOGY LEVEL 4
 FINAL EXAMINATION – 2009



MEX4234 – PLANT MAINTENANCE & WORK SERVICES

DATE : 22ND MARCH 2010
 TIME : 1400 HRS. – 1700 HRS.
 DURATION : THREE (03) HOURS

ANSWER ANY FIVE (05) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

QUESTION 01

- (a) Draw a typical organizational structure of a large manufacturing enterprise producing an item for which there is a big demand in the local market. Indicate the positions assigned for carrying out the maintenance function in the enterprise. Briefly explain the duties and responsibilities of the person heading the maintenance function.
- (b) "There are advantages and disadvantages of centralized and decentralized maintenance. Ideal would be to have a blend of the two in suitable proportions". Discuss.

QUESTION 02

- (a) The function "maintenance" is broadly classified into two groups namely, "planned maintenance" and "unplanned maintenance". Explain in detail what these groups are.
- (b) Explain the procedure to be adopted in preparing a maintenance programme for a newly established manufacturing facility.

QUESTION 03

- (a) Distinguish "product layout" from "process layout". Is there any other type of layout? Explain.
- (b) "To obtain quality by mere inspection after the job is done will not do, as the damage is already done". Comment on this statement with respect to the quality controlling in a manufacturing organization.

QUESTION 04

- (a) Explain the design criteria applicable for a machine foundation subjected to periodic forces.
- (b) "There are two types of vibration isolation in foundations". What are they? Explain with the aid of schematic diagrams where appropriate.

QUESTION 05

- (a) Write short notes on (i) boundary lubrication, and (ii) hydrodynamic lubrication.
- (b) "In applications where the consequences of a failure are severe, bearings have to be regularly inspected in addition to lubrication". Explain how bearings are regularly inspected.

QUESTION 06

- (a) Joining processes such as welding, brazing and soldering are available to the maintenance engineer for rebuilding or repairing of components. What are the factors on which the selection of a particular process depends?
- (b) With typical examples, describe the welding processes commonly used for repair and maintenance of machinery and equipment.

QUESTION 07

- (a) Briefly explain the different processes used for the removal of air pollutants.
- (b) Briefly explain how river water is purified for drinking purposes.

QUESTION 08

- (a) Any development activity (project) which would have an impact on the environment requires approval from the Central Environmental Authority before implementation. For this purpose an Environmental Impact Assessment (EIA) needs to be carried out. Explain what factors are considered in an EIA.
- (b) Disposal of solid waste has become a major concern of environmentalists. What are the environmentally friendly methods of disposal of solid waste?

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